BRANCHING OUT
IPM NEWSLETTER FOR TREES & SHRUBS

Viburnum Pests

Dawn Dailey O'Brien, Plant Pathology & Plant-Microbe Biology Section, Cornell University

Next in our periodic feature articles on important pests of common ornamental plants is Viburnum. These showy, bushy shrubs will soon start to flower and shortly after that some common and troublesome insect and disease problems will emerge. Here are some things to look for:

Aphids

There are two types of aphids that are very common on viburnums—the black bean aphid (*Aphis fabae*) and the snowball aphid (*Neoceruraphis viburnicola*) (142). Both have similar lifecycles. They overwinter as eggs on viburnum (or other woody hosts) and hatch about the time the buds begin to open in the spring Their feeding on the young, tender growth may cause foliage to become severely distorted—twisted, cupped and curled.

We've seen black bean aphids most often on *Viburnum opulus* and *Viburnum lentago*. Other shrub hosts include the European spindle tree (*Euonymus europaeus*), burning bush (*Euonymus alatus*) or mockorange (*Philadelphus* spp.). The aphid spends its summer on secondary hosts including a number of vegetable crops such as beets, beans, potatoes and tomatoes. The bodies of these aphids are olive-green to black bodies and their legs are light-colored, with black at the base and tip. This coloring and the fact that they like to cluster together makes them easy to spot. Additionally, look for the sticky honeydew that often coats the leaves below where they are feeding and the accompanying black sooty mold growing on the honeydew.

Black bean aphid damage on Nannyberry viburnum. Inset: black bean aphids closeup

The snowball aphid most often damages *Viburnum opulus, V. prunifolium*, and *V. acerifolia*. It is not known what their secondary hosts are for the summer. The aphids are grey to blueish-white aphid and are only found in the spring on this host.

In the summer months, both these aphids may disappear from their woody host, but cork-like pustules on the mid-veins on the undersides of the leaves will be left behind as indicators that the aphids were once feeding there.

The leaf curling symptom caused by the aphids persists long after the aphids are gone and could be misidentified as herbicide injury. Don't be fooled; if herbicides are to blame other species of plants in the area will also be affected.

If their predators, such as ladybeetles, syrphid flies and lacewings, are not sufficiently managing the populations, you may need to treat with a registered pesticide or one of several environmentally friendly options including soaps and oils. Suggested timing to treat snowball aphid is early to mid-May (148–298 GDD_{50}).

Bacterial Leaf Spot on Viburnum

This disease is caused by the bacterium *Pseudomonas syringae* pv. *viburni*. It tends to be more severe in cool, wet springs. The symptoms are dark angular spots on leaves with chlorotic margins. Under the microscope, these spots yield copious bacterial streaming. Leaves can become distorted if infection occurs early in the season. Shoot dieback can occur in severe cases. To reduce the probability of continued infection the following year, remove diseased shoots and leaves to reduce the level of inoculum. Avoid over fertilization, especially heavy spring applications of nitrogen because the tender new growth is easily attacked by the bacterium. Pruning prevents dense growth of the infected plant and promotes air circulation. *V.* x *burkwoodii* and *V. carlessii* are listed as very susceptible. Cultivars listed as resistant include *V.* x *burkwoodii* 'Mohawk', *V.* x *carlcephalum* 'Cayuga', *V. lantana* 'Mohican', and *V. rhytidophyllum* 'Alleghany'.

Bacterial leaf spot on viburnum © Brian Eshenaur

Viburnum Leaf Beetle (104) (*Pyrrhalta viburni*)

Viburnum leaf beetle is a serious pest which feeds exclusively on species of viburnum. It wasn't found in New York State until 1996 when it was discovered in four counties bordering Lake Ontario from Niagara to Cayuga. From there it has spread to almost all the counties in New York and to several surrounding states.

Its preferred hosts are *V. dentatum* complex, *V. trilobum, V. rafinesquianum, Viburnum opulus, V. lantana, V. sargentii, V. acerfolium,* and *V. lentago*. The thicker/hairier leaved species tend to be more resistant.

The overwintering eggs hatch in early May. The larvae are usually pale but can vary in color from yellow-green to black and they are covered in tiny dots. They feed gregariously on the undersurfaces of leaves and eventually will eat all but the midrib and major veins of the leaves. In mid-June the larvae fall to the ground, where they will pupate. Adults emerge in mid to late July. They are brownish and about ¼ inch long. Adults continue feeding just as voraciously as the larvae and can cause almost as much damage.

These adults will remain active feeding and laying eggs until the first hard frost. Plants which have been defoliated for 2 or 3 consecutive years may die.

One option for managing this pest is to prune the branch tips which contain the easily detected eggs sites. The females lay their eggs on the underside of viburnum twigs in a square area of bark they have chewed out. The pruning should take place in winter or early spring before the larvae emerge in early May. Avoid planting highly susceptible varieties.

Treat with a registered pesticide in early to mid-May (80–120 GDD_{50}) for larvae and as needed from July to September for adults. Alternatively, apply a single imidaclorid soil application any time in the spring but no later than early July to control adults.

Viburnum leaf beetle damage and adult. Insets: larvae and egg sites.

Viburnum Crown Borers

There are two species of clearwing moths commonly known as viburnum crown borers — the viburnum clearwing borer (*Synanthedon viburni*) and the lesser viburnum borer (*S. fatifera*) — that attack at the base or soil line of viburnum shrubs. These two species have a similar look and biology. The adult moths resemble wasps with ½ inch long blue-black bodies with yellow markings and a ¾ inch wing span. The larvae are whitish with red-brown heads. The larval feeding at the base (below ground and up to 18 inches high) may cause girdling and subsequent death of the shrub. Initial symptoms of infested plants include wilting, sparse foliage and early fall color. In later infestations the crown area is swollen and scarred with sawdust sometimes evident.

Viburnum species are the only known hosts. Wayfaring tree (*Viburnum lantana*), European cranberry-bush (*V. opulus*), American cranberry-bush (*V. opulus* var. *americanum*), Korean spice viburnum (*V. carlesii*), nannyberry (*V. lentago*), hybrid leatherleaf viburnum (*V.* x *rhytidophylloides*), and Sargent's cranberry-bush (*V. sargentii*) are all susceptible, but arrowwood viburnum (*V. dentatum*) is reported to be resistant. Stressed plants are especially susceptible to borer attack. As with many borers healthy plants are less susceptible to this pest.

Pupal case of viburnum clearwing borer at base of shrub. Inset: Adult. Both photos © David Parsons, University of Wisconsin, Bugwood.org

Adults begin to emerge near the very end of the blooming period of *Spiraea vanhouettei* (bridal wreath spirea). Apply the first application of a registered insecticide about this time at the base of the shrubs up to 18 inches high to protect the shrubs from newly hatched larvae attempting to penetrate the bark. Repeated treatments may be necessary depending on the residual effect of the insecticide and if adult moths are still flying. There are also reports of using beneficial nematodes as a soil drench in late August.

Downy Mildew on Viburnum (175)

Downy mildew on viburnum is caused by the water-mold *Plasmopara viburni*. Whitish downy growth develops on the underside of viburnum leaves and resembles a loose mat of powdery mildew hyphae, but is much more delicate. Leaves curl and turn a reddish purple color as the disease progresses late in the season. Cool to warm, moist weather is the ideal condition for this pathogen to thrive. It is favored by wet foliage. During the hot, dry summer weather the disease is likely to dissipate.

As a preventative measure, prune to prevent dense growth and improve air circulation. The key is to keep the foliage as dry as possible. The pathogen overwinters in infected fallen leaves so remove and destroy these leaves so the inoculum isn't present the following spring to splash on lower leaves and begin infection. Spray with a registered fungicide at two-week intervals between April 1 and June 15 according to the label directions. Be sure to get on the undersides of leaves as well as the topsides.

Downy mildew on underside of leaf. Many individual lesions appear angular as lesions develop between small leaf veins. © Sandra Jensen, Cornell University, Bugwood .org

Powdery Mildew

Unlike downy mildew which is found on the lower leaf surfaces, powdery mildew is predominantly on the top of the leaves. Powdery mildew on viburnum is caused by *Erysiphe viburni* (formerly *Microsphaera sparsa*). Ideal weather for powdery mildews consist of numerous days and nights of high humidity but no rain. High humidity is good for spore dispersal and survival but the spores of many species simply will not germinate (in fact, they will die) in the presence of free water on the leaf surface. The white-gray powder causes a coating on the surface of the leaves, stems and buds. The fungus causes a slow destruction of the surface cells. The symptoms are distorted buds and leaves, leading to early leaf fall.

The fungus causes little long-term damage and rarely needs treatment. If the mildew is aesthetically objectionable, there are several alternatives. This pathogen overwinters in either dormant buds or leaf litter. A good leaf clean up practice will eliminate some re-infection.